

Docket No.:

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN RE APPLICATION OF:

GROUP:

SERIAL NO.:

EXAMINER:

FILED:

FOR:

**DECLARATION UNDER 37 C.F.R. § 1.132**

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

Sir:

Now comes Dr. Gottlieb Georg Lindner who deposes and states that:

1. I am a graduate of Marsburg University and received my Ph.D. in Chemistry degree in the year 1994.

2. I have been employed by Evonik Degussa GmbH for 10 years as a Senior Manager in the field of R&D Silicas.

3. Regarding EP '755, the Examiner has argued that a Sears number of greater than 25 ml/5g is obvious and expected in view of the Sears number of  $22.6 \pm 0.25$  ml/5g of Product C Versuch 13 of EP '755 and in view of  $19.9 \pm 0.25$  ml/5g of Product A Versuch 6 of EP '755. However, there is a difference of at least 10 % between the claimed Sears number and the Sears number of EP '755. The margin of error is very small ( $\pm 0.25$  ml/5g). This was already discussed in the Rule 132 Declaration of Dr. Ralph Rausch, signed on April 18, 2007 and the Rule 132 Declaration of Dr. Görl signed October 19, 2007 (both of record).

4. The difference of at least 10 % between the claimed Sears number and the Sears number of EP '755 is not obvious. It is very difficult to increase the Sears number and at the same time keep all other parameter as claimed in the ranges as claimed. The Sears number is rather complex in its emergence: factors like temperature, precipitation time and pH and speed

are considered, although the complete mechanism is not entirely understood from a theoretical point of view. What is known is that even minor changes in the parameters used for the process of making may result in a different outcome. As a result, it is very difficult to simply raise the Sears number while keeping all other properties in the claimed range.

5. In other words, based on EP '755 there is no suggestion as to how to increase the Sears number to greater than 25 ml/5g and keep the BET surface area from 50 to 700 m<sup>2</sup>/g; the DBP absorption from 100 to 450 g/100 g; the choline chloride absorption from 150 to 400 g/100 g (75% absorption by weight aqueous solution); the CTAB surface area from 50 to 350 m<sup>2</sup>/g; the DBP/choline chloride absorption less than 1.07.

6. Contrary to the Examiner's belief, there is no linear relationship between all parameters. If one parameter is changed, it cannot be predicted how the other parameters will change. Therefore, simply increasing the alkaline number in EP '755 does not increase the Sears number while keeping all other parameters constant.

7. In fact, the prior art cited by the Examiner discloses that increasing the alkaline number would lead to an increase of the DBP (see Example 19 of Türk). The closest Example of EP '755 (C13) has a Sears number of 22.6 ml/5g, and an alkaline number of 7, DBP = 216 g/100g, CC-absorption = 205 g/100g and DBP/CC = 1,05.

8. Türk teaches away from increasing the alkaline number as this would increase the DBP.

9. Even assuming only a minimal increase of the DBP from 216 g/100g to 220 g/100g, this would cause that the ratio DBP/CC-absorption of example C13 of EP '755 would increase to 1,073 which would be out of the claimed range of the present invention. Türk, however, teaches that the increase of the DBP would be higher than 4 g/100g. Thus, a person of ordinary skill in the art starting with example C13 of EP '755 would not consider increasing the alkaline number because Türk teaches that this would cause a shift of the DBP/CC ratio out of the claimed range.

10. Further, the Sears number was increased in the present invention, for example, as disclosed at page 2, lines 17 to 20 of the specification, where it is explicitly pointed out that the silanol group density (= Sears number) is determined by the alkali number [AN], or in other words by the variation of pH/AN during precipitation.

11. The patents cited in EP '755 do not sufficiently disclose the variation of pH/AN during the precipitation process. Even considering the complete disclosure of the manufacturing process disclosed in EP '755 in combination with the in the references DE 1467019, DE 3144299 and DE 19526476 (cited in EP '755), it is found that there is no disclosure by which a Sears number of > 25 could be achieved. This is due to the fact that the Sears number, or in other words the number of silanol groups on the silica surface, is determined by the variation of pH/AN during precipitation, whereas all manufacturing processes disclosed in EP '755 in combination with those disclosed in the patents cited therein are incapable of any variation whatsoever of the pH values or alkali numbers.

12. Further, the Examiner is referring to similarities of the methods of EP '755 and the present invention as indication that similar Sears numbers are achieved. Applicants disagree.

Three different types of precipitated silica, A, B, and C, are described in EP '755. All three have different production methods. The methods for the precipitated silica A and B are so-called “pH precipitation methods,” in which the pH is kept constant during the precipitation (see Examples 1 and 2 of EP '755). The method of the present invention is a so-called “AN precipitation method,” in other words the alkali number (AN) is kept constant. It was already pointed out in the specification of the present application that pH precipitation methods are something different, and lead to different precipitated silica than AN precipitation methods (see page 3, lines 6-18). Thus, the methods for making precipitated silica types A and B of EP '755 are different and cannot result in the precipitated silica of the present invention.

The silica C from Example 3 of EP '755 is prepared using AN precipitation. The method according to Example 3 of EP '755 nevertheless differs decisively from that of the present invention, as the following table shows:

Method parameters	EP '755, Example 3	Invention, Examples 1-8
Precipitation time (min)	90	40-65
Precipitation temperature (°C)	91-93	85
Alkali number	7	20-40
Solid content of the suspension (g/l)	72	80-105

As can be seen, numerous significant parameters of the method of the present invention are clearly different. Thus, the precipitation time is not even half as long as in EP '755, in some instances. The alkali number is 3-6 times greater.

The total combination of method parameters brings about the clearly different surface chemistry. Therefore, as shown above, the Sears number is a clear distinction criterion. Sears numbers of greater than 25 are neither disclosed nor made obvious by EP '755 even in combination with Türk.

13. The increase of the Sears number by at least 10 % compared to EP '755 as discussed in item 3 above is significant because it is necessary to achieve a sufficient affinity between the silica of the invention and hydrophilic liquids. Without such affinity the desired DBP/CC ratio of below 1.07 could not be reached. The inventors have found out that – for a given set of other physico-chemical properties of a silica - a borderline exists for the Sears number which has to be exceeded.

14. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false

statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

15. Further deponent saith not.

John M. S. S.  
Signature

13.05.2008  
Date

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